

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings of claims in the application:

LISTING OF CLAIMS:

1-18. (canceled)

19. (currently amended) ~~Thermal~~ A thermal insulation multi-layer structure, comprising:

at least one flexible dense compressed expanded graphite layer based on compressed expanded graphite particles, and a characterised in that the density of the said flexible flexible dense compressed expanded graphite layer, called dense compressed expanded graphite layer, is between 0.5 and 1.6 g/cm<sup>3</sup> (500 and 1600 kg/m<sup>3</sup>); ~~and in that the said thermal insulation structure also comprises another layer called~~

at least one sub-dense compressed expanded graphite layer, based on compressed graphite particles with a lower density, which is between 0.05 and 0.3 g/cm<sup>3</sup> (50 and 300 kg/m<sup>3</sup>), said dense and sub-dense layers being adjacent and bonded to each other.

20. (currently amended) ~~Thermal~~ The thermal insulation structure according to claim 19, in which [[the]] said dense and sub-dense layers made of compressed expanded graphite are adjacent and are bonded to each other by carbonation of a

carbonisable binding agent, ~~typically phenolic resin, furfuryl resin or pitch.~~

21. (currently amended) ~~Thermal~~ The thermal insulation structure according to claim 20, in which the adjacent dense and sub-dense layers made of compressed expanded graphite are intimately bonded together over their entire contact surface.

22. (currently amended) ~~Thermal~~ The thermal insulation structure according to claim 19, obtained by stacking [[the]] said adjacent dense and sub-dense layers, with one alternation of dense and sub-dense layers made of compressed expanded graphite.

23. (currently amended) ~~Thermal~~ The thermal insulation structure according to claim 19 in which [[the]] said sub-dense layer or layers made of compressed expanded graphite have a total thickness of less than 40 mm, ~~and typically between 5 and 20 mm.~~

24. (currently amended) ~~Thermal~~ The thermal insulation structure according to claim 19, in which [[the]] said dense layer or layers made of compressed expanded graphite have a total thickness of less than 2 mm, ~~and typically of between 0.5 and 1.5 mm.~~

25. (currently amended) ~~Thermal~~ A thermal insulation element designed to be fitted on furnaces operating in a non-oxidising atmosphere and at temperatures of more than 800° C, ~~characterised in that it~~ wherein the thermal insulation element comprises a thermal insulation structure according to claim 19.

26. (currently amended) ~~Thermal~~ The thermal insulation element according to claim 25, ~~characterised in that it~~ wherein the thermal insulation element forms part of [[the]] a wall of [[the]] a combustion chamber of [[a]] the furnace operating at temperatures of more than 800° C and in a non-oxidising atmosphere.

27. (currently amended) ~~Thermal~~ The thermal insulation element according to claim 26, ~~characterised in that it~~ wherein the thermal insulation element is in [[the]] a form of a brick, such that [[the]] an assembly of several of these bricks forms [[the]] a surface of the combustion chamber of [[the]] said furnace.

28. (currently amended) ~~Thermal~~ The thermal insulation element according to claim 26, ~~characterised in that it~~ wherein the thermal insulation element is in [[the]] a form of a cylindrical wall in one or more parts making up the combustion chamber of the said furnace.

29. (currently amended) ~~Thermal~~ The thermal insulation element according to claim 25, ~~characterised in that its~~ wherein the thermal insulation element has an apparent surface ~~[[is]]~~ covered with a dense compressed expanded graphite layer with a density of more than  $0.4\text{g/cm}^3$  ( $400\text{ kg/m}^3$ ) ~~typically between 0.5 and  $1.6\text{g/cm}^3$  ( $500$  and  $1600\text{ kg/m}^3$ ).~~

30-35. (canceled)

36. (new) The thermal insulation structure according to claim 20, wherein the carbonisable binding agent comprises resin, furfuryl resin or pitch.

37. (new) The thermal insulation structure according to claim 19, in which the said sub-dense layer or layers made of compressed expanded graphite have a total thickness between 5 and 20 mm.

38. (new) The thermal insulation structure according to claim 19, in which the said dense layer or layers made of compressed expanded graphite have a total thickness between 0.5 and 1.5 mm.

39. (new) The thermal insulation element according to claim 25, wherein the thermal insulation element has an apparent surface covered with a dense compressed expanded graphite layer with a density between  $0.5$  and  $1.6\text{g/cm}^3$  ( $500$  and  $1600\text{ kg/m}^3$ ).

40. (new) The thermal insulation element according to claim 19, wherein the layers are not impregnated with binder.